Materials

Material	Use	Supplier
6.15% stock silk solution	Stock solution for making other concentration solutions	Coburn Lab
Centrifuge tubes	Storage	Coburn Lab
24 well plate	Lyophilization	Coburn Lab
Sharpie	Labelling	Coburn Lab
Lyophilizer	Lyophilization	Coburn Lab
Vacuum Chamber	Storage	Coburn Lab
Autoclave	Insolubilization	Coburn Lab
Razor blade	Cutting	Coburn Lab
Deionized Water	Hydration	Coburn Lab
Chicken Leg	Used to obtain muscle tissue samples	Trader Joes
Scalpel	Cutting	Coburn Lab
Sodium Dodecyl Sulfate	Decellularization	Coburn Lab
Aspirator	Aspirating fluids	Coburn Lab
Biopsy Punch	Used for biopsy punching samples	Coburn Lab
Petri Dishes	Storage	Coburn Lab
Universal Testing Machine	Mechanical Testing	Goddard Hall Lab 007

Methods

To start, a 6.15% solution of silk was produced and provided by Coburn Lab. 5mL of six different concentrations, 1%, 2%, 3%, 4%, 5% and 6% were created in centrifuge tubes. 1mL of each solution was pipetted from the centrifuge tube into a well of a 24 well plate. This was repeated 4 times for each concentration. The 24 well plate was then labelled with a sharpie to know which concentrations were in which wells. The 24 well plate was then placed in a lyophilizer by a trained lab specialist, and the silk solutions were lyophilized to make 24 scaffolds, four of each concentration. The scaffolds were stored in a vacuum chamber until ready for next step. The scaffolds were then placed in an autoclave by a trained lab specialist, making the scaffolds insoluble. The insolubilized scaffolds were then placed in water for rehydration. Finally, the scaffolds were then cut to a height of 3mm using a razorblade.

While preparing the scaffolds, muscle tissue samples were created. To make these muscle tissue samples, a regular chicken leg piece was taken from the grocery store. Then, using a scalpel, multiple tissue samples of approximately 10mm in diameter and 3mm high were cut from the leg piece. 30ml of a 1% SDS solution were made in a centrifuge tube, and the tissue samples were placed in as well. The centrifuge tube was then attached to a shaker using tape, and shaken at 25% speed for roughly five days. The centrifuge tube was then removed from the shaker, and the liquid inside the centrifuge tube was aspirated, leaving only decellularized chicken tissue behind.

All samples, scaffolds and decellularized chicken tissue, were taken out of their centrifuge and placed on separate petri dishes. Then, each sample was biopsy punched using a 3

mm diameter biopsy puncher. The biopsy punched samples were placed in separate centrifuge tubes containing approximately 5mL deionized water, and the remaining materials were all discarded.

To test the mechanical properties, the biopsy punched samples were placed on a Universal Testing Machine, which gave out readings of Force vs Time. Once all samples were tested, all centrifuge tubes and samples were discarded.